MITSUBISHI MOTOR SALES OF AMERICA, Inc.

TECHNICAL SERVICE BULLETIN

SUBJECT:	NO.	TSB-90-42B-002
BODY WATER LEAK DIAGNOSIS AND REPAIR	DATE	November, 1990
	MODEL	All

PURPOSE

This bulletin provides diagnostic, repair procedures, and general information associated with body water leaks. These service suggestions are of a general nature, but common sense will suggest their application to specific cases.

GENERAL DIAGNOSIS

Customer Input

One of the most important factors in locating the source of body water leaks is customer input. The more information you receive from the customer, the easier it will be to determine the problem. Listed below are just a few general questions you could ask to get you going in the right direction.

1. Do you know where the water seems to come from?
2. When does the vehicle leak?
   A. During a rainstorm?
   B. When driving?
   C. In a car wash?
   D. Driving on a flooded street?
   E. When parked on a hill?
3. Where is the water collecting?

After receiving as much information as possible from the customer, you can begin your diagnosis and testing.

Inspection

Before testing, look over the general area where the water seems to be coming in. Check for things that are obviously wrong, such as torn, loose, or badly distorted weatherstrips. Look for gaps and holes at body joints or corners that should be closed up or sealed. Even though the opening is not visible, traces of rust can be a sign of an open body seam. Sometimes you can locate a water leak by examining the door opening surfaces, especially after the vehicle has been driven in wet weather. Look at the dried road splash around the area outside the weatherstrip contact line. If the weatherstrip is sealing properly, there will not be any trace of splash inside the line.

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FILE UNDER: Group 42B Body Repair In the Dealer Service Information Binder (815)

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Inspection (continued)

When inspecting for visible water leaks, be sure to check the alignment of the doors to see how well they fit in the opening. As with doors, checking the obvious also applies to deck lids and hatches. Here again, proper alignment and closing are basic requirements for good weatherstrip sealing, especially when the vehicle has had body repairs or glass replacement that may result in component misalignment.

When inspecting for a floor pan water leak, traces of mud or dirt are an indication that the water is coming in from below. Still, it is possible for water to enter higher up and run downward to soak the carpet.

Water Testing Notes

Other tests can be used for checking sealing and leaking, but water is the only practical test for leaks around the windshield, rear window, inner door panel watershields, body joints and seams.

Only a small stream of water is needed to find a leak (Figure 1). If too much water is used, it can be forced past even a good fitting weatherstrip. It can also splash over the suspected area, so you will have trouble finding the leak source.

The actual test is easy. Remove the hose spray nozzle and restrict the flow enough to get about a three inch stream.

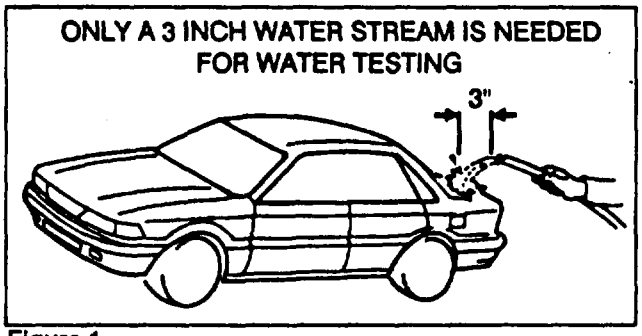

Figure 1

NOTE: The water may rush out when first turned on, point the hose away from the test area to prevent overwetting.

Recommended Sealants

In the text that follows you will read references to sealing materials. Any high quality sealant that is right for the application will be acceptable. Three such sealants are shown in the table below.

SEALANT RECOMMENDATIONS	
3M Part No.08634 or equivalent	Window Weld Resealant
3M Part No.08648 or equivalent	Joint and Seam Sealer
3M Part No.08655 or equivalent	Brushable Seam Sealer

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REPAIR PROCEDURES

Windshield and Rear Window

Begin the water test by starting at a bottom corner of the glass. Move slowly across the bottom toward the other corner, up the side and across the top (Figure 2).

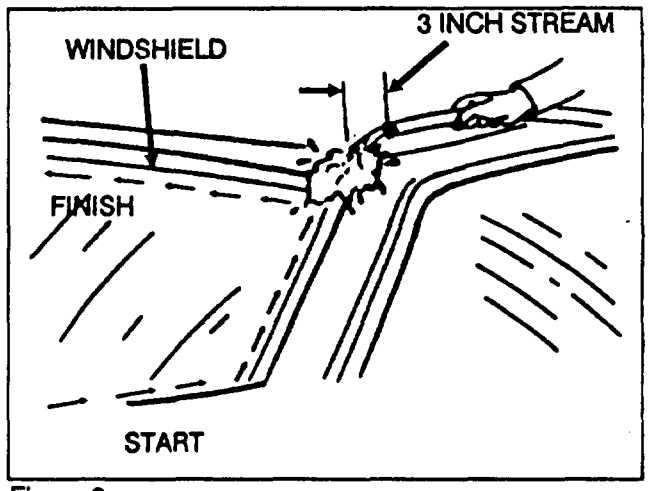

Figure 2

On vehicles having a visible rubber weatherstrip, it may be helpful to isolate the leak. It will be either between the glass and rubber weatherstrip, or between the weatherstrip and the sheet metal. Do this by carefully aiming the water-stream or by using masking tape directing water to fall only on the glass side (or sheet metal side) of the rubber weatherstrip (Figure 3). Stop when leakage appears inside. This will pinpoint the leaking area. Dry thoroughly before applying sealer.

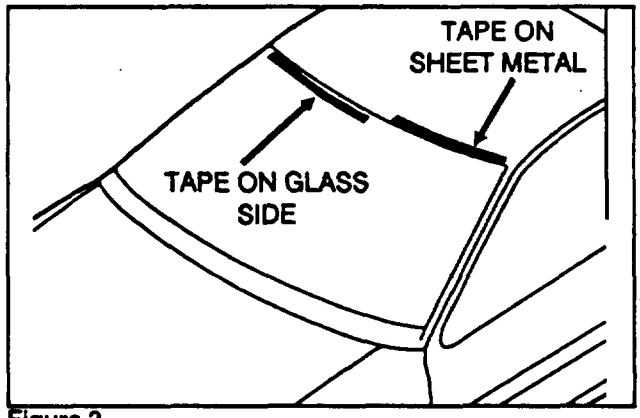

Figure 3

Occasionally, the inside mouldings may have to be removed prior to water testing. With mouldings installed, you may not be able to pinpoint the leak source, since the water can build up in mouldings prior to dripping in the vehicle.

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Windshield Repair Procedures

If a moulding and a weatherstrip is visible on the vehicle, insert the applicator nozzle between the rubber and the moulding (Figure 4). Squeeze a bead of sealer while moving the applicator along the outside edge.

If the leak still exists, dry the area and squeeze sealer between glass and rubber. Verify the seal by water testing again.

If the problem is not corrected, remove the outer moulding and check moulding clip installation and gaps.

If the vehicle lacks a weatherstrip on the exterior windshield or rear window outside edge, squeeze sealer between glass and moulding. If this does not correct the leak, remove outer mouldings. Inspect the area for moulding clip installation and gaps. For moulding removal and installation, refer to the appropriate service manual.

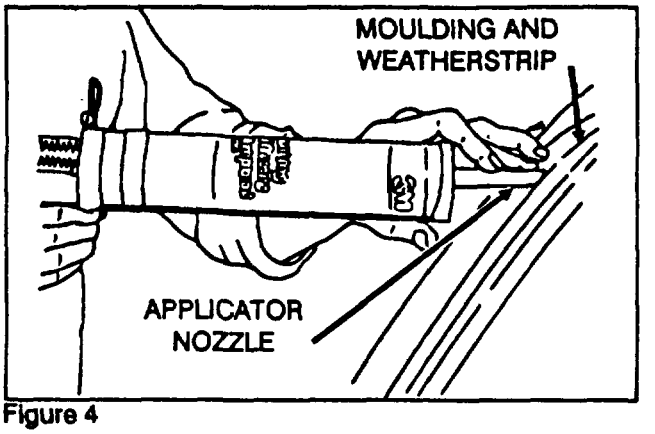

Figure 4

Doors

When water testing the doors, ask an assistant to sit in the vehicle and watch for water coming in, as you work the hose around the gap at the door edge on the outside.

Start your check at the lower edge of the door, (See Figure 5) and then move upwards. If you begin at the top, the runoff will wet the untested area and can make a leak difficult to find.

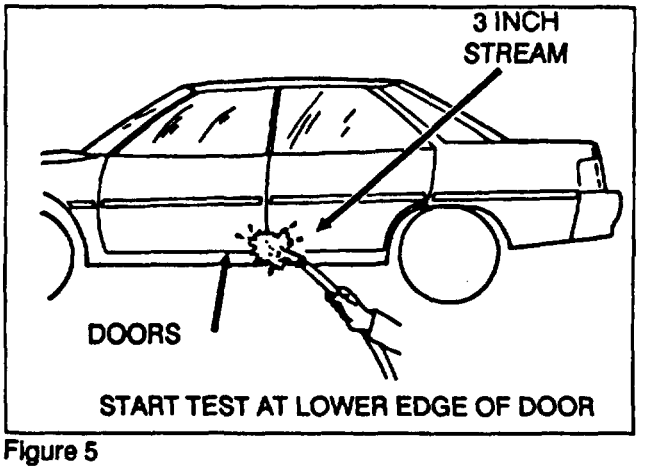

Figure 5

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If the weatherstrip doesn't seal properly, it's easy to see where the water comes in at the door edge.

Mark the leak points with chalk or tape, so you can find them when the door is open.

Where the water test shows low spots at body joints or other places around the door opening, you may have to build up these low points. Level any low spot with plastic solder and repaint the repaired area, or shim the weatherstrip with a vinyl foam strip to obtain a seal.

Since there may be more than one leak, correct any leaks you find in lower areas before you test higher.

If the water test shows the weatherstrip is sealing okay, run water along the side window lower weatherstrip, and check the inside trim panels for dampness, especially at the bottom. This water normally runs out the door and body drains.

The inside trim panel can be soaked if the watershield under the trim panel is torn, missing, or not properly installed.

If a watershield (plastic sheet) is removed for any reason (Figure 6), its edges should be resecured to the metal door or body panel in its original location.

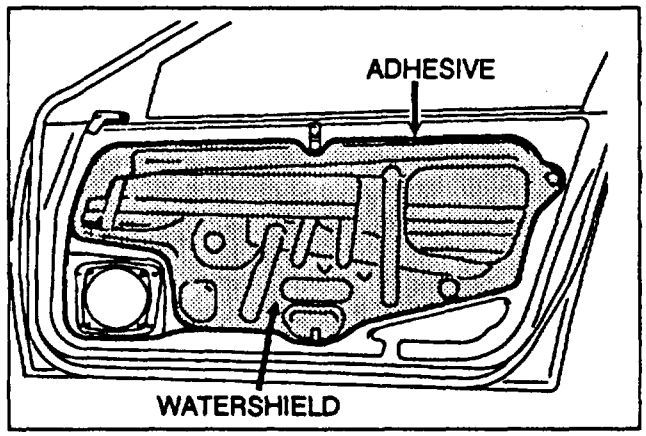

Figure 6

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The door glass must be in good contact with the upper weatherstrip. The upper edge of glass should not be visible with the window closed.

Cut flexible strips of paper about two inches wide and place them between the weatherstrip and glass in several places (Figure 7). If the paper pulls out easily, you have found a possible leak point.

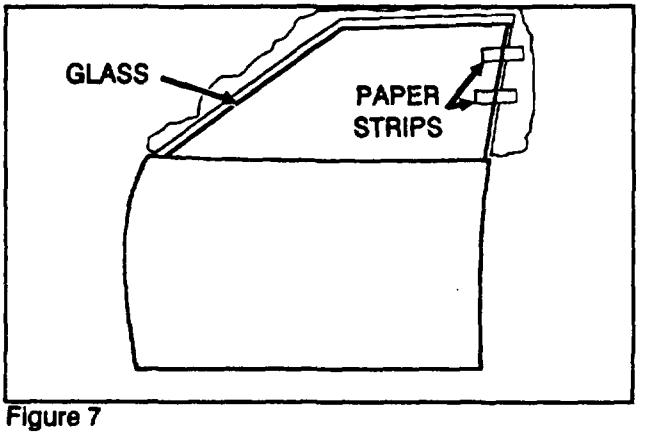

Figure 7

Start the water test at the bottom of the glass. Direct the water across the bottom, up and then across the top slowly, until leakage occurs (Figure 8). This will pinpoint the leaking area. If leakage is between glass and weatherstrip, the glass needs adjustment. If leakage occurs over the weatherstrip or retainer, remove weatherstrip and check torque on screws in the retainer. If found to be loose, tighten them, and replace weatherstrip.

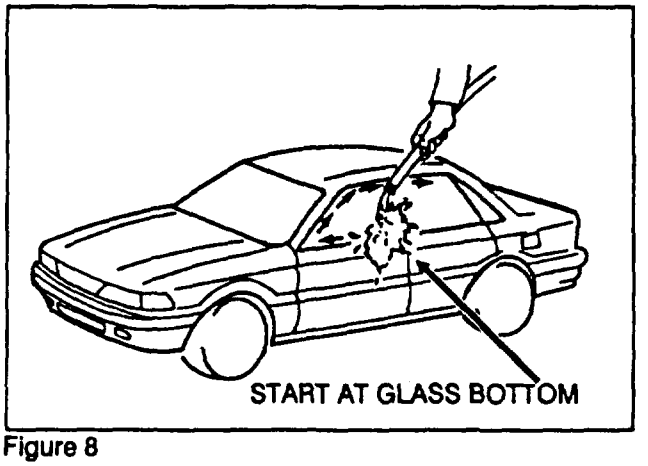

Figure 8

After correcting the problem perform the water test again. If leakage still occurs, remove the weatherstrip. Check the sealing surfaces for distortion and splits. Then check roof rail for open holes or distortion. Use an appropriate type of sealer to seal holes. Reinstall the weatherstrip making sure it seals the door glass completely.

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Deck Lids

First check to see if the deck lid is flush with surrounding metal surfaces. Then open deck lid and see if the metal channel around the outside of the weatherstrip is bent or distorted. Check weatherstrip for splits, improper alignment, or poor cement application. Repeat the water test.

Where the water leak test shows low spots at body joints or other places around the trunk opening, you will have to build up these low points. Level any low spots with plastic solder and repaint the repaired area or shim the weatherstrip with a foam strip to obtain a satisfactory seal.

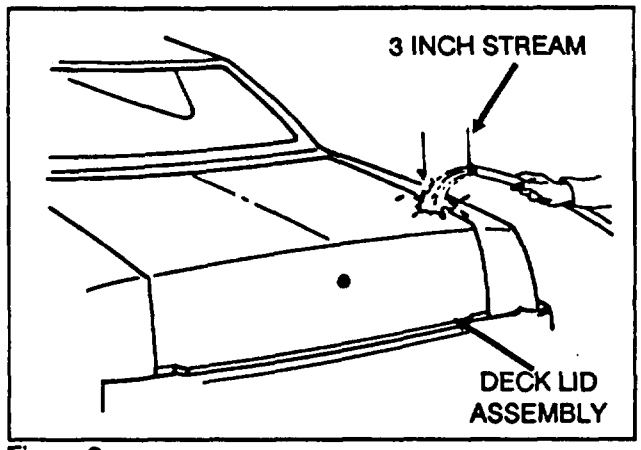

Figure 9

If leakage is caused by pinholes or open seams, seal with an air dry sealer, and on exposed surfaces touch-up the paint.
If end extensions or tail lights are the cause of leakage, check first for loose or missing nuts, and then apply sealer on the nut and stud.

If leakage is not found in any of the above areas, check the rear window's lower corners for leakage.

Body Seam Sealing

When you inspect body seams and joints for leaks, don't assume that a generous coating of sealant automatically means a watertight seal. It only takes a small bubble of trapped air to cause a pinhole that can let in water. In time, even a small leak can undermine heavy sealant applications. For long term, it's safer to clean off and reseal any doubtful spots in the sealant using brush on sealer (Figure 10).

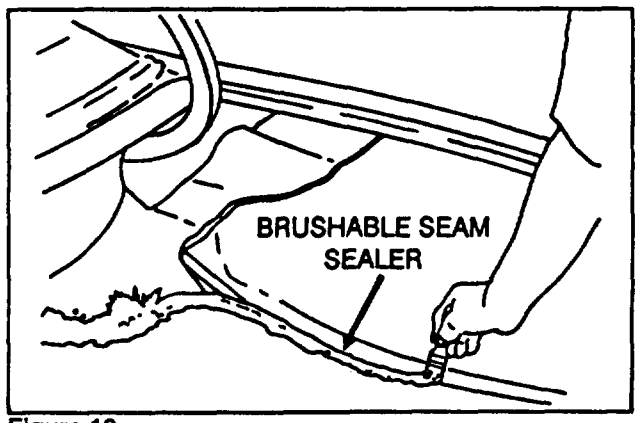

Figure 10

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Cowl Testing

The water test also can be used to check for leaks in the front or cowl area of the body. Raise the hood and flow water over the body seams, corner joints, bolt, and plug holes in the cowl structure. Look carefully for missing and poor fitting grommets. Don't overlook the windshield wiper motor mounting seal, and be sure to look over the fresh air inlets for evidence of leaks at plenum chamber seams.

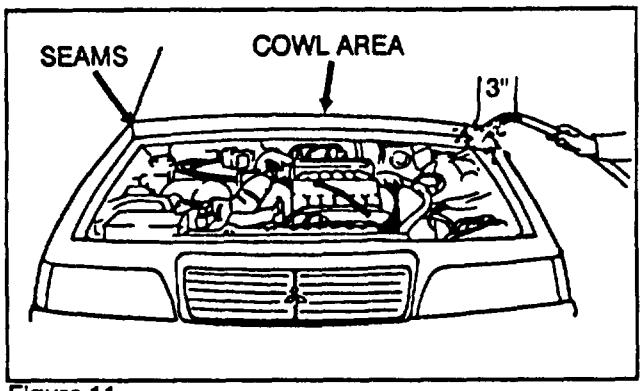

Figure 11

Make sure the radio antenna lead-in grommet is in place, and pay close attention to body seams in the cowl side section that are hidden by fenders.

When checking for leaks in the cowl area, you may have to remove inside trim panels at the front and sides to see where the water is coming in. It may also be necessary to remove heater and air conditioner parts to locate leaks near the fresh-air inlet plenum.

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Floor Pan Testing

Soaked carpeting is a common result of body leaks. It's not unusual to find water getting in through the floor pan. However, it is also possible for water to enter higher up and run downward to soak the carpet.

Since a soaked carpet should be removed for drying, it is a good way to start your check. Of course, carpeting removal means you will have to remove door sill plates, and pull out seats and cushions. Refer to the appropriate service manual for removal and installation. This gives you a clear field for action so that you can check body seam sealing and the floor pan plugs in the floor pan.

It's usually not practical to water test for floor pan or wheelhouse leaks unless a special underbody water spray arrangement is available. As an alternative, the best way to locate these leak points it is look for rusty seam edges of other traces of leaks after carpet removal. Traces of mud are an indication that the water is coming in from below.